

Weekly Report

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Intro

This week the research projects were resumed.

Research

Mobile Data Analysis

- **Information Diffusion** The model called “spikeM” presented in [1] is useful to depict the rise and fall patterns of influence propagation. In our project, we can apply spikeM to detect patterns of the inflow/outflow in a specified cell. However, some problems and extensions should be addressed:
 - One spikeM model can only match one inflow or outflow of a cell, which means that two models are needed to describe the flowing pattern.
 - The temporal scale and length of time segments will derive different models, hence we need to choose multiple scales and lengths to mining different patterns.
 - It is a question that how to show and compare the result of models among different cells. It may be helpful if the models can be visualized and compared visually.

Current Li Chen and I are implementing the spikeM algorithm. We will have some preliminary results in a couple of days.

Additionally, the cell flows are being re-computed with a new de-duplication scheme by Lin Tao and I. Later we will focus on resolving the issue of ping-pong effect which affects the calculation of flows seriously.

Historical Data Analysis

On Friday Prof. Chen Xi came to our lab and discussed with us about the history data analysis project. A promising research problem is to investigate the evolution of Chinese surnames by integrating multiple historical databases. I think that multi-source integration of historical data could be an interesting topic.

Projects

ViSketch

Before Oct. 10th we will make our second demo video to show new examples and features of our system. Some of the features might not be able to be implemented on time and will be hardcoded.

Plan for Next Week

- Implement the spikeM model and test the results on the flow data;
- continue refactoring the SVM paper.

References

- [1] Y. Matsubara, Y. Sakurai, B. A. Prakash, L. Li, and C. Faloutsos, “Rise and fall patterns of information diffusion: model and implications,” in *KDD '12: Proceedings of the 18th ACM SIGKDD international conference on Knowledge discovery and data mining*, ACM Request Permissions, Aug. 2012.